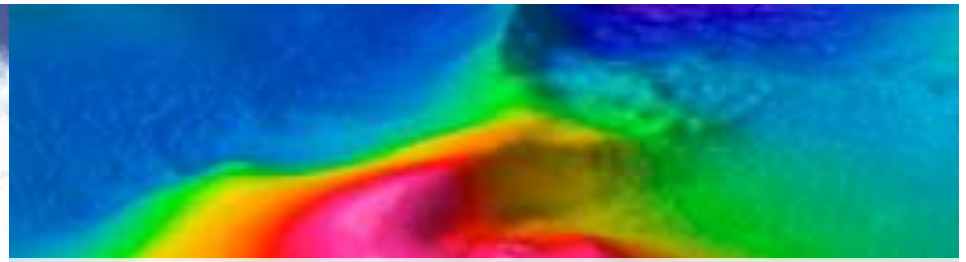
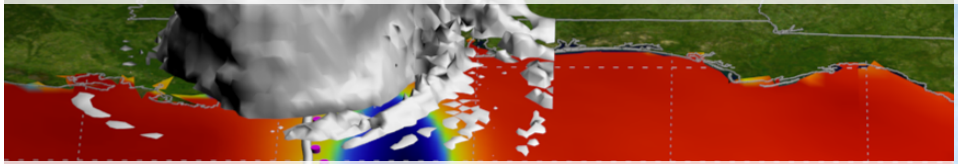



NOAA's Climate Program Office

Modeling, Analysis, Predictions, and Projections Program




Don Anderson
Annarita Mariotti
Dan Barrie
April 30th, 2012

MAPP
Modeling, Analysis, Predictions, and Projections

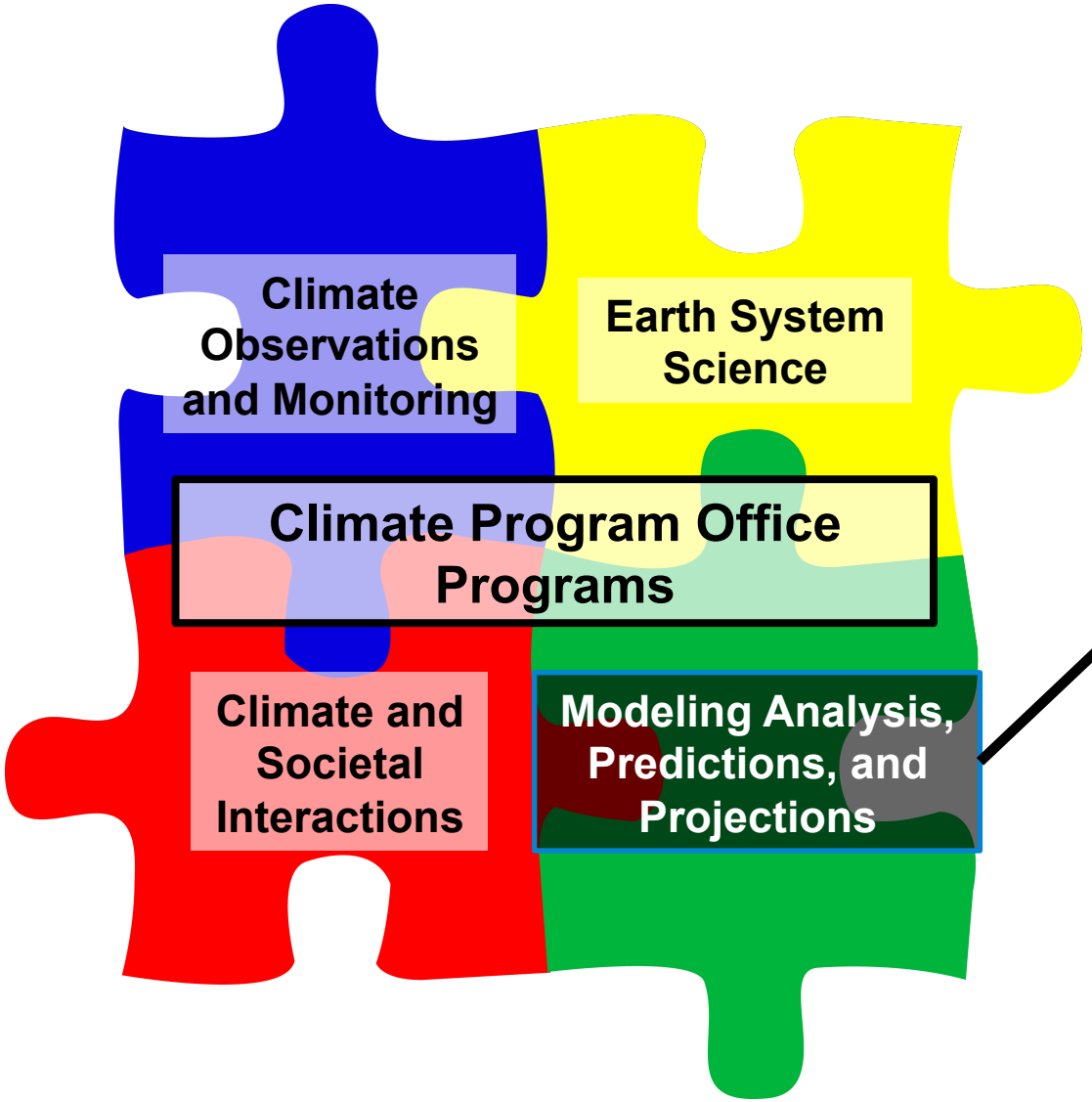
Outline

- MAPP Overview

- NCEP-related MAPP research activities

- Considerations for CFS model development

Overview: Climate Program Office



MAPP's Major Objectives:

- Model Development
- Model Analyses
- Predictions/ Projections
- Climate Applications

Overview: MAPP Program Activities

MAPP
Modeling, Analysis, Predictions, and Projections

" To understand and predict natural variability and changes in Earth's climate system"

Long-Term Climate Outlooks (CMIP5 Task Force)

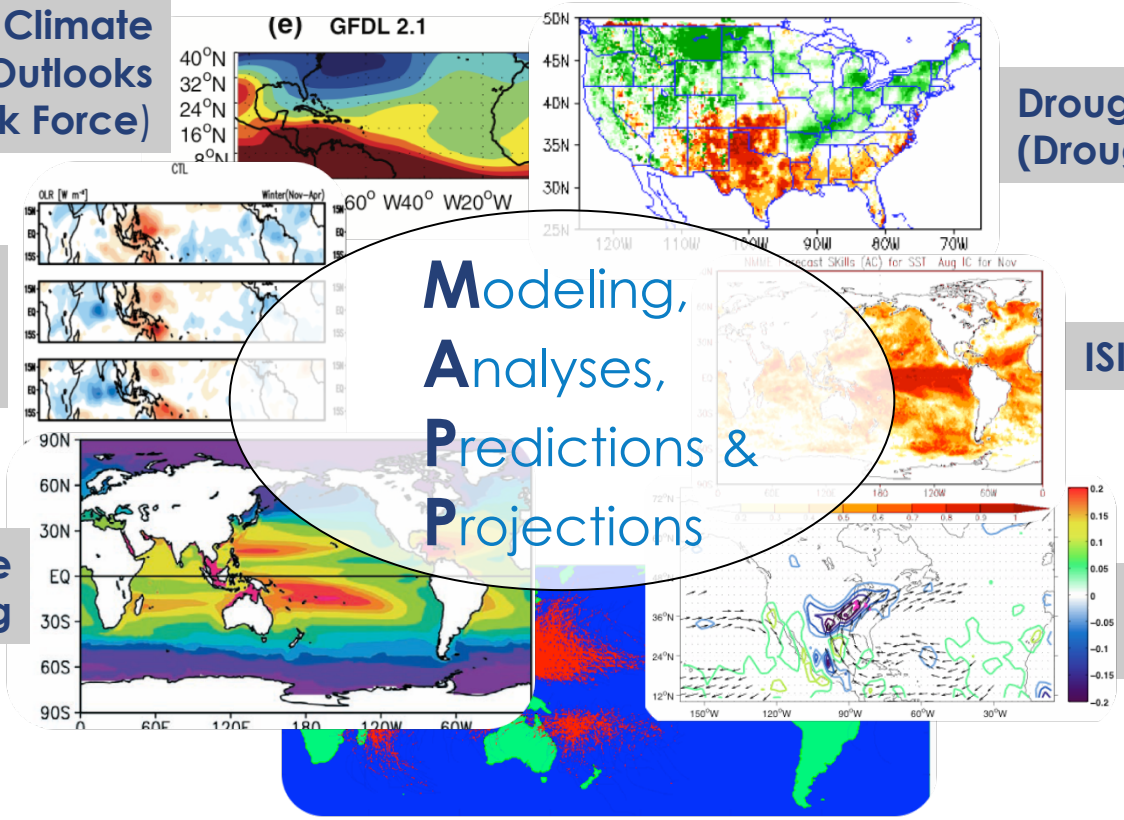
Drought and Extremes (Drought Task Force)

Climate and Earth System Model improvement

ISI climate prediction

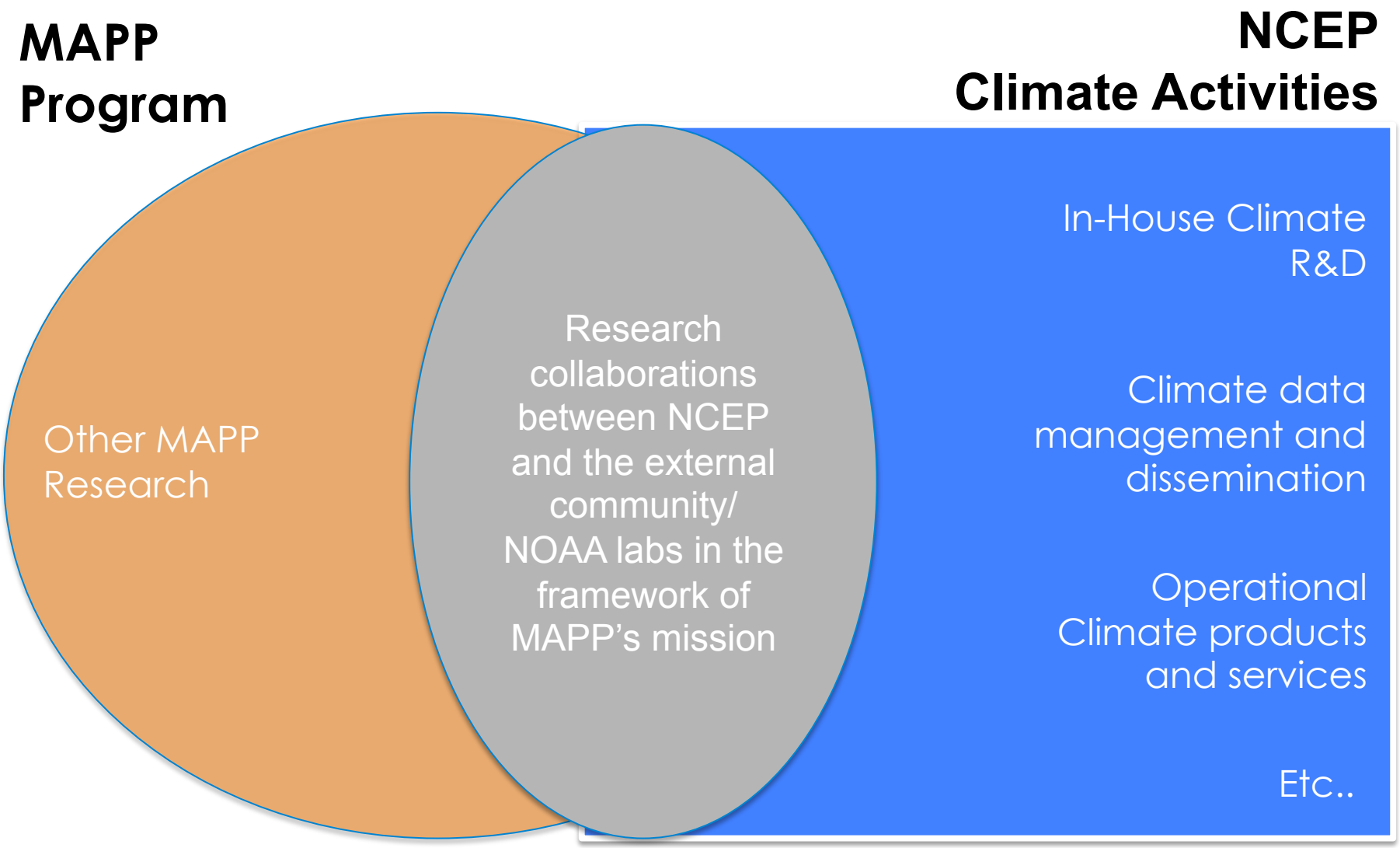
Regional-scale modeling

Climate Re-analyses



Extending NOAA's research capability via competitive funding opportunities, Task Forces and a webinar series that connect NOAA with the broader community

MAPP and NCEP Climate Activities



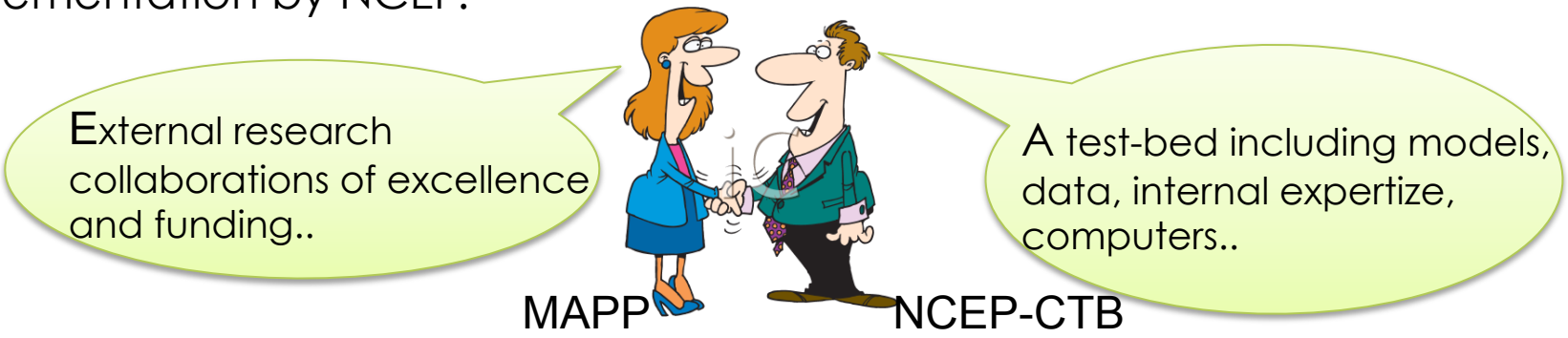
MAPP-CTB Research

Research GOAL: Testing and evaluating climate modeling and prediction research advances for improved operations

Ultimate GOAL: The transition of research advances into improved NCEP operations

A 2 element PROCESS is needed:

1. Competitively selected MAPP-CTB projects, including clear metrics to test research advances
2. A systematic assessment of the outcomes for operational use and implementation by NCEP.



A Partnership is needed..

RESEARCH AREAS: Model development, MME climate prediction, drought monitoring and prediction

MAPP
Modeling, Analysis, Predictions, and Projections

Examples of MAPP funded research activities involving NCEP

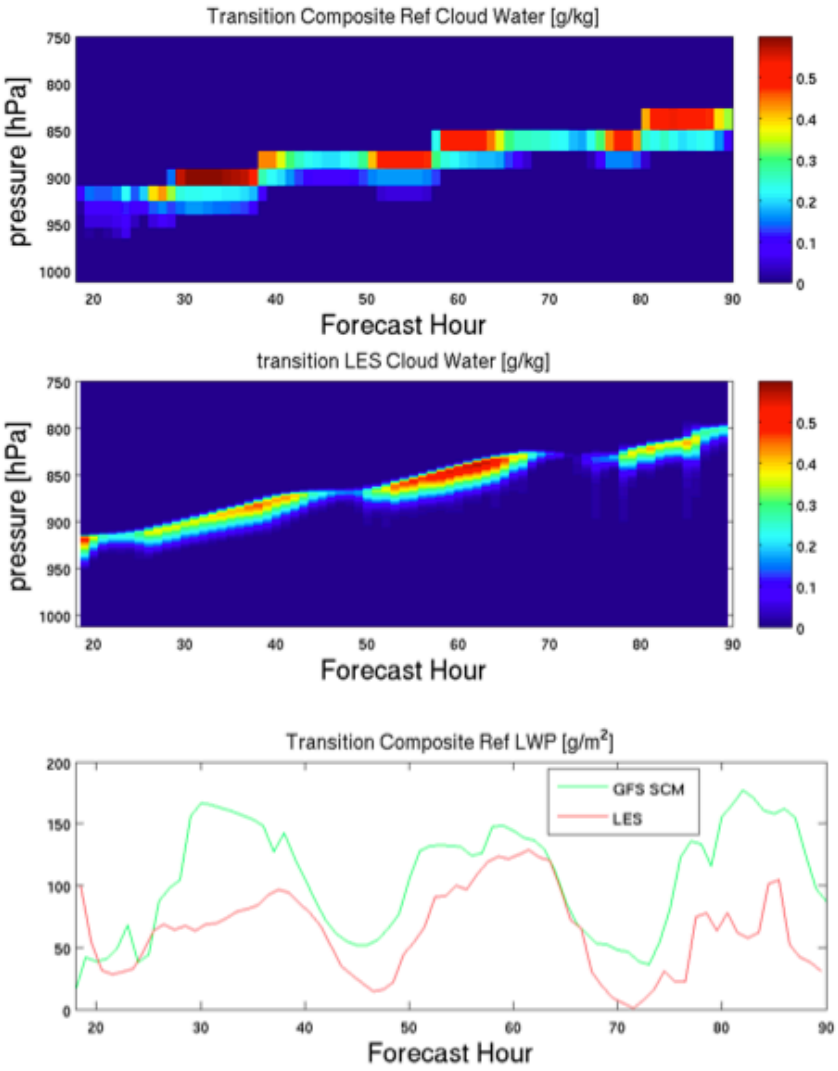
Model Development

- CPT to improve the representation of the cloudy boundary layer in GFS and CAM5 with a focus on the subtropical stratocumulus to cumulus transition (involving NCAR, JPL, U of Washington, LLNL).

- Representation of the stratosphere in CFS (involving ESRL).

- Land model (NOAH) upgrades for groundwater, snow modeling, lakes (various institutions..).

- NLDAS upgrades, with snow/soil moisture data assimilation (involving NASA/USDA/NESDIS..)



Courtesy of C Bretherton

National Multi-Model Ensemble (NMME) Experiment

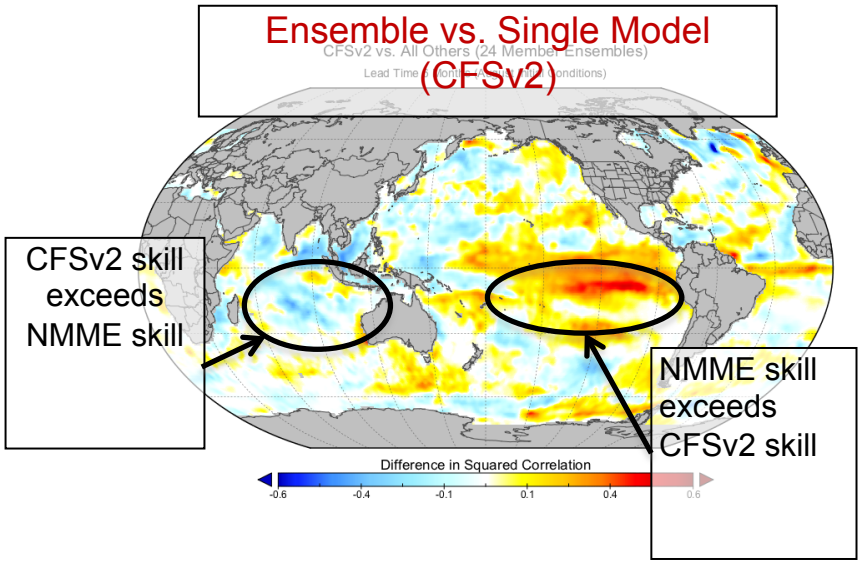
An experimental U.S. multi-model ensemble to improve ISI climate and drought prediction

Led by NOAA, but an interagency/ academic collaboration

Partners: U Miami, NCAR, COLA, IRI, U Colorado, NASA (GMAO), NOAA (EMC, CPC, GFDL), Princeton

Phase 1 (FY11): Utilize the available national models and a simple experimental design in near-operational mode.

Phase 2 (FY12-13, in review): Purpose-driven experimental set-up to test optimal design; address specific research questions.



A MAPP-CTB Project

The Drought Task Force

Achieve significant new advances in current capabilities to monitor and predict drought over North America

- A group of 30-plus scientists, primarily MAPP-funded; a life-span of 3 yrs;
- Individual projects and 3 WGs developing/ applying a testbed framework for drought
- A partnership with NIDIS and NCEP Climate Test Bed;

- Several drought research projects involving NCEP scientists and models
- MAPP-CTB projects to test and evaluate drought monitoring and prediction research advances in an experimental system (WG3)

MAPP
Modeling, Analysis, Predictions, and Projections

CFS Model Development Considerations

General Considerations

- Welcome this workshop focusing on CFSv2 evaluation to identify CFS model progress and gaps

- Programmatic questions that are to be addressed are central to developing a "healthy" CFS model development process

- Formulating a plan to address the issues therein is essential and challenging..

Formulating a Plan..

- Plans for future CFS development should consider broad-NOAA climate modeling needs and resources, and be specific on:
  - role of CFS, to justify the need
  - targets for next development cycle
  - resources needed/available

- Given the current budget environment, synergies with other modeling efforts need to be a critical element of any development plan

Role of collaborative modeling

- Strategic use of programmatic funds to leverage collaborative model development works IF:
  - there is a critical internal R&D investment
  - there is an infrastructure/environment that supports collaborative work

- An effective process is needed to:
  - identify "most appealing" test/evaluation research targets to complement internal development
  - evaluate research outcomes for operations
  - systematically implement those deemed as "advances"

Further Program Information

Access MAPP Materials Through
http://www.climate.noaa.gov/

- Program information

- Funded projects

- Webinar recordings/schedule (next: CMIP5, May 2)

- Drought and CMIP5 Task Force information

Thanks!

Overview: Research Programs' role